final environmental assessment

master plan
november 1975

FORT BOWIE

NATIONAL HISTORIC SITE / ARIZONA

DEPARTMENT OF INTERIOR
NATIONAL PARK SERVICE

NEGATIVE DECLARATION

Fort Bowie National Historic Site, Arizona

Western Region

In compliance with the National Environmental Policy Act of 1969, the National Park Service has prepared an environmental assessment on the following proposed project:

Proposed

Fort Bowie Master Plan

The assessment process did not indicate a significant environmental impact from the proposed action. Consequently, an environmental statement will not be prepared.

The environmental assessment is on file at the above park and will be available for public review on request.

8/3/75
Date

William M. Sickles
Superintendent, Fort Bowie National Historic Site

8/22/75
Date

O. L. V. Clay
General Superintendent, Southern Arizona Group

9/15/75
Date

Howard H. Chapman
Director, Western Region

Environmental Review
Master Plan
Fort Bowie National Historic Site
Arizona

The master plan for Fort Bowie National Historic Site has been prepared to guide the management, development, use and preservation of the historic site's prehistoric, historic and natural resources over a period of at least ten years. An environmental assessment has been prepared to describe the environmental effects of the proposed action and the alternatives to this action that have been considered in the planning process. These documents have been revised in accordance with comments that resulted from their public distribution and from public meetings that were held at Willcox and Bowie, Arizona, on June 5 and 6, 1975.

The plan proposes to acquire 30 acres of grazing land in the vicinity of Apache Pass to complete the land acquisition authorized by Congress in 1964. The owners will receive just compensation for their lands based on the appraised value and will be allowed to continue grazing for the remainder of their lives. Tax loss to the county from the sale of these lands to the Federal government will be negligible and will be offset by additional revenues resulting from sales and services to visitors to the historic site.

Validity investigations will be made on the apparently abandoned unpatented mineral claims within the historic site. If any claims prove valid, the claimants will be compensated for their remaining interest.

Development will be limited to additional maintenance facilities, minimal restroom facilities and an unmanned information shelter as needed. A visitor contact station may be built on a site yet to be determined some time in the future.

The existing interpretive access trail will be extended to complete a loop trail from the second fort site along the crest of Overlook Ridge to the trailhead parking area.

Archeological research will continue to locate other historic and prehistoric sites in the vicinity. No construction will be undertaken without prior archeological clearance by a professional archeologist.

Through cooperation with the County and State, the Apache Pass Road will be maintained to rural highway standards as a scenic road.

Through the cooperation of the Bureau of Land Management additional lands will be withdrawn to provide a protective buffer around the historic site.

Review of these proposed actions has led to a determination that in compliance with the provisions of the National Environmental Policy Act of 1969 this proposal is not a major Federal action and has no significant adverse impact on the quality of the human environment. Therefore an environmental impact statement will not be prepared.

However, due to the significance of the Fort Bowie National Historic Site this property is listed on the National Register of Historic Places, the State Historic Preservation Officer and the Advisory Council on Historic Preservation will be afforded an opportunity to comment on future planning documents and specific proposals that would affect the historic site's cultural resources.

FINAL
ENVIRONMENTAL ASSESSMENT

MASTER PLAN
FORT BOWIE NATIONAL HISTORIC SITE
ARIZONA

United States Department of the Interior / National Park Service

CONTENTS

I. DESCRIPTION OF THE PROPOSAL

Fort Bowie National Historic Site, a 970-acre park situated in the northeastern portion of Cochise County, Arizona, contains the ruins of the first and second Fort Bowie, a Butterfield stage station, and other sites and ruins pertaining to man's activities (historic and prehistoric) in the Apache Spring area. The national historic site, authorized by an act of Congress (Public Law 88-510) approved 30 August 1964, was established in July of 1972. The act designates for preservation the site and remaining structures of Fort Bowie, with additional lands not to exceed a total of 1,000 acres. The authorized appropriation is not to exceed $550,000. Legislation will be sought to increase this allotment to $1,000,000.

A. Type of Action and Need for the Proposed Action

The type of action required is a master plan to guide the management, development, and interpretation of Fort Bowie National Historic Site for at least 5 years. A master plan for the site has not been approved or implemented.

B. Concepts of the Plan

The master plan proposes preserving the park's atmosphere of natural wildness and historic abandonment. To this end, the following actions are proposed.

1. Resource Management

The existing historic structural remains will be stabilized and preserved.

Efforts will be made to find a satisfactory method of stabilizing and preserving exposed adobe walls.

No conjectural restoration of historic structures will be attempted.

Archeological investigations will be implemented to locate other historic structures and sites, as well as prehistoric sites, in the vicinity of Fort Bowie.

The Region

FORT BOWIE NATIONAL HISTORIC SITE

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The cooperation of Federal, State, and local agencies will be sought in the preservation of sites or remains outside the park boundaries.

The park superintendent will work with Federal, State, and local agencies, and private firms and individuals, to develop local land-use patterns that are compatible with maintenance of the site's historic integrity.

The invalidation of approximately 80 unpatented mineral claims will be sought. These claims predate the establishment of the park, and appear to be abandoned as no assessment work has been recorded.

2. Development

Onsite development will be kept to a minimum and will be situated away from prime resource areas (historic sites and features). The present housing area, visitor-contact station, and maintenance structure will be retained; additional maintenance facilities will be provided as necessary. When visitor use warrants, minimal restroom facilities and an unmanned information shelter will be constructed at the trailhead parking area on the Apache Pass road.

The cooperation of the State and county will be sought, to preserve the Apache Pass road (from the pass to the mouth of Siphon Canyon) as a historic parkway, with rural highway standards applied.

Formal agreements will be sought to preclude unsightly or intrusive development at Apache Spring.

Interpretive exhibits will be placed along roads and trails, and at other appropriate locations. Period photographs will be used.

The cooperation of other Federal agencies will be sought in the development of an integrated regional trail system.

An extension of the existing interpretive/access trail will be constructed, which will lead north from the second fort site and then follow the crest of Overlook Ridge, ending at the trailhead parking area. This extension will complete a loop trail.

The Butterfield Overland Trail will be further delineated and interpreted.

3. Land Classification

All park lands will be classified as Class VI (historical and cultural areas), and will be managed in accordance with the *Administrative Policies for Historical Areas of the National Park System* (1973). Physical developments essential for preservation, access, and onsite interpretation and management will include the maintenance area and temporary residential quarters, and the two transportation corridors that encompass the Apache Pass road and the El Paso Natural Gas Company pipeline.

4. Land Status

To protect the visual setting of Apache Pass, the remaining acreage (30 acres) allowed under the enabling legislation for land acquisition will be used to purchase 30 acres of land at the summit. A right-of-way for maintenance use only, 5/8 mile in length and averaging 20 feet in width, along a private road extending from the east gate of the park to the residence area will also be acquired. The boundary will be extended to include these lands. A land exchange of 40 acres of private land will be encouraged between the Bureau of Land Management and the owner, to protect the mouth of Siphon Canyon.

C. Interrelationship with Other Projects

Cooperative agreements with the Bureau of Land Management (BLM) will be maintained. The Bureau will continue to manage permit-grazing within the park and on adjoining public-domain lands.

Under the present permit, water from Apache Spring will continue to be available for stock use (see Appendix A).

The Bureau proposes to withdraw and reserve additional lands for national historic site buffer zoning.

Camping and picnicking sites are available at Bowie, Willcox, and nearby Chiricahua National Monument, and in several units of the Coronado National Forest. These recreational uses are not planned for Fort Bowie.

The Cochise Visitor Center and Museum was recently constructed at Willcox, Arizona. The museum displays photographs and artifacts of early Indian and pioneer activities in the area. The National Park Service will work with the museum in presenting interpretive information about Fort Bowie National Historic Site.

General Development

FORT BOWIE NATIONAL HISTORIC SITE

11.8 MI TO BOWIE (INTERSTATE 10)

Siphon Canyon

COUNTY ROAD

Ruins Viewpoint

VISITOR TRAILHEAD PARKING

CANYON

CUTOFF

(Site) BASCOM CAMP

CANYON

TEVIS ROCKS

APACHE PASS

(Site) WAGON TRAIN MASSACRE

WILLOW GULCH

(Ruin) BRIDGE ABUTMENT

HISTORIC ROUTE

CANYON

VISITOR ACCESS TRAIL

SIPHON

8 MI TO STATE RT 186

20 MI TO CHIRICAHUA

28 MI. TO WILLCOX

PARKE CAMP

HISTORIC ROUTE

SERVICE ROAD

3 MI TO APACHE PASS ROAD

OLD BUTTERFIELD OVERLAND ROUTE 1858-1861

PROPOSED LOOP

OVERLOOK

RIDGE

RESIDENTIAL AND MAINTENANCE AREA

(Site) STAGE STATION

CEMETERY

HISTORIC

MILITARY

APACHE SPRING

ROAD

CUTOFF

(Site) BATTLE OF APACHE PASS

CANYON

SIPHON

FIRST FORT BOWIE

SECOND FORT BOWIE

0 250 500 1000

FEET

proposed acquisition

fence

archeological site

wells

proposed interpretive site / parking area

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II. DESCRIPTION OF THE ENVIRONMENT

A. Location and Access

Fort Bowie National Historic Site lies 13 road miles south of Bowie, Arizona (population 500), and 35 miles southeast of Willcox, Arizona (population 2,570). The nearest large towns are Tucson, Arizona (population 265,000), 120 miles to the west, and El Paso, Texas (population 323,000), 200 miles to the east. Interstate 10 is the major east-west highway serving this area, with interchanges at both Bowie and Willcox. From Bowie, the Apache Pass road — a graded county road — leads 12 miles south to the historic site's parking area. From Willcox, visitors proceed east over 23 miles of paved highway (Arizona 186), and then northeast over 12 miles of gravel road through Apache Pass to the trailhead parking area. Fort Bowie is also accessible from the southwest along U.S. 666 and Arizona 181 and 186.

B. Existing Development

A sign at the parking area invites visitors to walk along a 1.5-mile interpretive trail to the ruins of the second Fort Bowie. A trail-guide booklet interprets the historic and natural features along the trail, including an unidentified ruin, the Parke camp site, the Butterfield stage station ruin, the post cemetery, Siphon Canyon and the site of the Battle of Apache Pass, a replica Apache camp, and Apache Spring. Just east of the spring, a ¼-mile spur trail leads to the remains of the first Fort Bowie. The main trail continues a short distance to the site of the second Fort Bowie. The various ruins consist of semi-stabilized adobe and stone-masonry walls and foundations. A small adobe structure (10 x 12 feet) near the site of the second fort serves as an administrative office and visitor-contact station. The building contains the files, a library, Indian and military displays, and a few sales items.

A ¼-mile trail leading to Overlook Ridge, northwest of the second fort site, provides a panoramic view of the area. A Park Service residence trailer, a pit toilet, a small maintenance area, and administrative offices are situated in a depression to the northeast of the second fort site. An administrative road that crosses private land provides access to the maintenance and residential area.

C. Physical Environment

1. Natural Resources

a. **Climate.** The climate of the area is characterized by abundant sunshine, low humidity, wide daily and seasonal temperature ranges, and meager and variable precipitation. The seasonal weather pattern indicates summer/winter precipitation and spring/fall drought.

Mean annual minimum and maximum temperatures are 41°F (January) and 78°F (July), respectively. Temperature extremes of 8°F and 106°F have been recorded on the site. The average annual precipitation is 12 inches, of which approximately two-thirds falls during the summer. The precipitation rate may approach 2 inches per hour during rare thunderstorms, causing sheet flooding and erosion.

b. **Topography and Physiography.** The historic site, located in the northern foothills of the Chiricahua Mountains on the southeast side of Apache Pass, lies in a basin/shelf area north of Bowie Peak (6,943') and Helen's Dome (6,377'). The area is dissected by Goodwin Canyon, Cutoff Canyon, and Siphon Canyon, which drain northeast into the wide San Simon Valley. The elevation of the site ranges between 4,590 and 5,190 feet above sea level.

c. **Geology and Soils.** Geology in the area is partially the result of faulting, with a northwest-trending overthrust block of Horquilla limestone resting on Bisbee shaly siltstone. Major geologic exposures include decomposed granite, noted generally in the vicinity of the lower foot trail and the first Fort Bowie/Apache Spring area; siliceous and metamorphic limestone, encountered near the site of the second fort and on Overlook Ridge; beds of greenish-gray shaly siltstone, found north and east of the residence area; and milky quartzite and fine-grained granite from the upper slopes of Bowie Peak and Helen's Dome, visible throughout the area. The thin top soils are coarse and gravelly, with fine subsoils overlying bedrock. The washes contain large quantities of sand mixed with gravel and boulders.

d. **Water.** No major streams cross the site. Permanent reliable water is produced by Apache Spring and by the mine spring near the residential area. These springs result from an outflow of ground water in the broken and

faulted rocks. The Park Service has drilled one well, a 102-foot shaft located in lower Siphon Canyon.

e. **Minerals.** Although more than 80 mining claims have been established within the boundaries of the park, there are no known major mineral resources. A marble quarry southeast of the historic site proved economically unfeasible due to transportation costs.

f. **Vegetation.** The diversity of vegetation in the park relates to two factors: the intergradation of the Chihuahuan Desert on the east and the Sonoran Desert on the west; and the altitudinal gradient, which encompasses three communities of Merriam's Upper Sonoran Life Zone. The lower desert/grassland community grades into the evergreen/woodland community, and chaparral species are scattered throughout.

The desert/grassland is characterized by side-oats grama, spruce-top grama, six-weeks grama, feather fingergrass, vine-mesquite, plains bristlegrass, and tobosa grass. Shrubs associated with this community include creosote, little-leaf sumac, mesquite, Emory oak, turpentine-bush, crucillo, soaptree yucca, Palmer agave, and ocotillo. The desert/grassland can be subdivided into desert (ocotillo/agave/opuntia), grassland (grass/mesquite/turpentine-bush), and desert scrub (crucillo/ceanothus/sumac).

The evergreen/woodland community is represented by pinyon pines, Arizona white oak, shrub-leaf oak, whiteleaf oak, one-seed juniper, and alligator juniper.

The sandy washes support a riparian community characterized by Arizona walnut, net-leaf hackberry, Texas mulberry, cottonwood, and Bonpland and Dudley willows.

Chaparral species include manzanita, mountain mahoganies, silk tassels, and scrub oaks.

The site also contains several species of cacti and many spring/summer annuals. For a more complete list of the plant species, see Appendix C.

g. **Wildlife.** The diverse vegetation and sparse human population in the area have allowed an extensive wildlife population to survive in

parking area and trailhead

road

apache pass

apache pass

butterfield

overland

trail

foot trail

FIRST FORT BOWIE

SECOND FORT BOWIE

deciduous woodland
riparian–walnut, hackberry, and willow

desert/grassland
desert shrub–grass, crucillo, ceanothus, and sumac
desert–grass, ocotillo, agave, and opuntia
grassland grass, mesquite, and turpentine-bush

evergreen woodland
encinal–oak, pine, and juniper

0 500 FEET

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Vegetation Map

FORT BOWIE NATIONAL HISTORIC SITE

the Fort Bowie vicinity. Mammals include deer, bobcat, gray fox, coyote, racoon, coati, skunk, desert cottontail, and blacktail jackrabbit.

Common birds of the area include Gambel's quail, ladder-backed woodpecker, verdin, mockingbird, cardinal, house finch, brown towhee, and black-throated sparrow.

The area's reptiles include lizards, whiptails, the Gila monster, rattlesnakes, and several species of non-poisonous snakes. See Appendix D for a more detailed list of wildlife.

2. Ecological Considerations

a. **Soils.** The soils in the area severely limit potential building sites, road sites, or septic-system sites; they are also poorly suited for use in road fill. These limitations are created by thin soils (soil surface close to bedrock), and by the steep slopes in the vicinity. The soils are highly erodible during heavy precipitation, and are not held in place well by vegetative cover.

b. **Water.** Water is a limited resource in this area. Legislation specifies that existing water rights at Apache Spring must not be affected. The water sources in the area, including the springs and National Park Service well, may all be hydrologically related, and extensive pumping at one site may decrease the waterflow at the others.

D. Social Environment

1. Regional Socioeconomic Environment

Arizona, with a 1970 population of 1,770,000, has been one of the country's fastest growing states. Most of this growth has occurred in the southern part of the State, where the mild winter climate has favored the development of tourism and large retirement communities. National defense installations and related industries have also stimulated the regional economy in the last 20 years.

The population of Cochise County has almost doubled in the last 20 years; the 1970 census showed a population of 61,918. Over two-thirds of this population is concentrated in the towns in the southwestern quarter of the

county. Personnel stationed at the Fort Huachuca military base account for over 25 percent of the county population.

Historically, Cochise County has derived its income from ranching, mining, and military installations; each of these economic sectors is still significant. Although the amount of land devoted to agriculture has decreased, the income from crops and cattle has increased. Agriculture is responsible for 11.8 percent of the county's employment. Mining and related industries presently employ 14 percent of the county's workers, but the importance of the mining industry appears to be decreasing due to the depletion of known ore deposits. Government employment is the largest sector of the economy; one-third of the employed persons in Cochise County receive their incomes directly from Fort Huachuca. Tourism and retirement communities do not yet contribute greatly to the economy, and local planners hope to stimulate the growth of these income-producing sectors.

2. Local Socioeconomic Environment

The northeastern portion of Cochise County is primarily dependent on agriculturally derived income. Willcox, the largest community in the area, is the major shipping point for produce and livestock, as well as a commercial center. The community has several tourist-based service industries and hopes to increase the recreation-oriented sectors of its economy.

Closer to the national historic site, Dos Cabezas, Bowie, and San Simon are unincorporated communities that remain for the most part agriculturally dependent. Dos Cabezas is a reviving ghost town. Bowie and San Simon have both been bypassed by Interstate 10, which has not helped their service businesses. Fort Bowie is surrounded by large cattle ranches that encompass both private and leased public land. This land has potential for recreational uses and land development. Other recreational lands in the vicinity include Chiricahua National Monument and several units of the Coronado National Forest.

3. Visitor Profile

No formal analysis of visitation has been made for the national historic site. Annual visitation is approaching 4,000 persons a year. The average stay is approximately 2 hours. Many visitors come from the surrounding

region – a fact that is partially explained by the recent establishment of the national historic site (July 1972) and the absence of effective signs on the highways serving the area.

E. Historical, Archeological, and Paleontological Resources

From the time of prehistoric Indian occupation to the present, Apache Pass and Apache Spring have been important to east-west travel between the Chiricahua and Dos Cabezas Mountains. Probably the first people to use this area were individuals of the Cochise culture (7,500-300 B.C.) followed by Mogollons (300 B.C.-1200 A.D.), Salados (1200-1400 A.D.) and Apaches (1500-1886 A.D.) Early Indians were primarily nomadic foragers and hunters; a greater dependence on agriculture was exhibited in each successive culture, except the Apache. At least three sites – probably of Mogollon origin – are known to be in the vicinity.

The Spanish entered the region in the late 1500's, but little is known of their activities in the Apache Pass area.

In 1858, a Butterfield Overland Mail stage station was built near Apache Spring, encouraging increased use of the Apache Pass route by immigrating settlers. For 3 years, pioneers and Apache Indians maintained a fragile coexistence, but the 1861 Bascom Affair precipitated hostilities, and the Battle of Apache Pass in July 1862 prompted the hasty construction of the first Fort Bowie, established on July 28th of that year. Poor location and inferior living conditions at this fort forced the Army to construct a new fort complex. Begun in 1868, the second Fort Bowie served the area for the following 26 years. On the 17th of October 1894 – 8 years after Geronimo's surrender – Fort Bowie was abandoned. The land was auctioned, and local residents stripped the buildings for lumber, accelerating the decline of the site.

The entire Fort Bowie National Historic Site is listed on the National Register of Historic Places. When contacted verbally, the Arizona State Historic Preservation Officer knew of no other sites in the vicinity that are eligible for nomination.

James W. Sheire and Robert M. Utley have produced reports for the National Park Service's Division of History, Office of Archeology and Historic Preservation, detailing the history and historic structures of Fort Bowie National Historic Site. No archeological surveys have been conducted, but known structures have been stabilized and partially excavated.

III. ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

The following impacts can be expected to result from implementation of the master-plan proposals:

A. Impacts on Archeological and Historical Resources

Because no significant changes in management, use, and development of prime resource areas (historic sites and structures) are proposed, the impacts on archeological and historical resources resulting from implementation of the master plan will be negligible. Cattle will be restricted from grazing in areas that contain historic features, and visitors will be cautioned to avoid damage to fragile resources. Known resources within the park will continue to be stabilized, protected, and treated with erosion retardant. Resources treated with retardant will continue to be monitored, to assess the results of the treatment.

A major research effort is underway in an attempt to develop preservation techniques applicable to adobe. As soon as improved methods for preserving adobe are developed, these methods will be employed in protecting the historic structures at Fort Bowie.

When park boundaries are extended, additonal historic sites will be brought under Federal protection. As archeological investigations proceed, any new resources that are discovered will be identified, studied, and preserved. The Apache Pass road will be maintained according to standards for rural highways, and will receive a historic parkway designation. All the above actions will aid in perpetuating archeological and historical resources related to Fort Bowie.

B. Impacts on Natural Resources

Good range-management policies administered by the Bureau of Land Management will continue to encourage the maintenance of environmental quality. Some damage to natural resources will result from cattle grazing and watering within and near the park, but these uses will be carefully monitored to avoid trampling and excessive defoliation.

Future mineral extraction will be prohibited in the park, and the Park Service will seek to invalidate existing mining claims. Existing and proposed Bureau of Land Management buffer zones will effectively prevent further mineral entry on lands adjacent to the historic site. These actions will aid in reducing the potential for damage to natural resources.

The establishment of an integrated regional trail system will reduce the possibility of unnecessary trail construction and environmental disturbance within and near the historic site. Because existing trails run from north to south and east to west, they can probably be incorporated into a regional trail system, with little additional construction. However, the development of any new trails required to complete the system will entail vegetation clearing for 4-foot-wide paths, and will increase the potential for soil erosion along those corridors.

Increased use of existing and proposed trails in and near the park may result in additional trampling of vegetation near trail corridors and prime resource areas; any loss of vegetation due to increased visitor use will increase the potential for soil erosion in these areas. No construction is proposed for or alongside the abandoned Butterfield Overland Trail, but some disturbance of vegetation along this route is expected because the historic trace is a popular attraction for visitors.

The restroom facility and interpretive shelter proposed for the trailhead parking area will be constructed on the already disturbed pipeline right-of-way. Thus, environmental disturbance resulting from implementation of this proposal will be minimal and temporary: noise and dust pollution during construction, and a slight increase in the potential for soil erosion at the site.

Because any new maintenance facility will be constructed on the site of the present maintenance building, no significant impacts on natural resources will result. Soil erosion and noise and dust pollution will increase slightly during construction.

C. Impacts on Esthetics

Several master plan proposals – minimizing park development, acquiring scenic easements at Apache Pass, encouraging a land exchange to prevent incompatible development at the mouth of Siphon Canyon, and supporting BLM efforts to establish a buffer zone around the national historic site – will aid in maintaining the integrity of the historic setting in the Fort Bowie vicinity.

D. Impacts on Interpretation and Visitor Use

The proposed loop extension of the park trail will increase the interpretive value of the national historic site by incorporating additional sites,

features, and scenic vistas along the extended route. The regional trail system will further enhance interpretation by tying together related historic sites and features that lie both within and outside park boundaries. Both proposals will enhance use by providing for smooth visitor circulation and increasing opportunities for visitors to view the environment of historic Fort Bowie. The proposed interpretive facility, as well as the new wayside exhibits to be placed along roads and trails and near historic sites, will aid interpretation and visitor understanding of the Fort Bowie story.

Because cattle will be prevented from grazing in prime resource areas, safety hazards will be reduced and visitor appreciation of the national historic site will be enhanced.

E. Impacts on Land-Use Options and Related Economic Benefits

In order to maintain the historic setting of Fort Bowie, the Park Service will cooperate in every effort to prohibit incompatible uses in the vicinity of the park. The establishment of agreements to preclude development — particularly along the Apache Pass road, at the mouth of Siphon Canyon, and within the existing and proposed BLM buffer zones — will reduce land-use options in these areas, and result in unquantifiable losses of potential income for those people who might be interested in developing these lands. The invalidation of existing mining claims and the prohibition of future mineral entry within and near the park will result in similar losses to mining interests that might be considering future production in the area.

No significant disturbance of current grazing patterns will result from implementation of master-plan proposals. The grazing rights on lands to be acquired at Apache Pass will continue for the lifetime of the present owners.

F. Impacts on Management

The master plan proposes the addition of lands containing historic sites and features that will require management and protection. Improved maintenance facilities and administrative road access will allow managers to properly administer, maintain, interpret, and protect park resources, as well as to serve the needs of present and expected numbers of visitors.

IV. MITIGATING MEASURES INCLUDED IN THE PROPOSED ACTION

All proposed actions will comply with pertinent agreements concerning easements, rights-of-way, grazing rights, water rights, and access to water. Lands will be acquired only after mutual agreements and guarantees are established with adjoining private landowners.

Prior to any construction involving ground disturbance (e.g., interpretive trails or other facilities), surveys will be made to ensure that unknown archeological or historical remains are not adversely affected.

In compliance with the National Historic Preservation Act of 1966 and in accordance with the Advisory Council on Historic Preservation's "Procedures for the Protection of Historic and Cultural Properties" (36 CFR Part 800), all actions for implementing the proposals of the Fort Bowie master plan will be reviewed, in consultation with the State Historic Preservation Officer, to determine if there will be an effect. All projects having an effect will be formally reviewed by National Park Service historians, architects, or archeologists, as appropriate, to ensure that (1) the effect will not be adverse, or (2) sufficient protective measures are incorporated into the project to preclude, avert, or satisfactorily mitigate any potential adverse effect. Further, if there will be an effect, consultation with the State Historic Preservation Officer will continue, to determine the nature of that effect. Documentation of this finding will be forwarded to the Advisory Council on Historic Preservation for review and/or comment.

V. ANY ADVERSE EFFECTS THAT CANNOT BE AVOIDED SHOULD THE PROPOSAL BE IMPLEMENTED

Active use of the access trail and the historic roads and traces will contribute to sheet runoff and erosion on surrounding park lands.

The adobe ruins will remain semi-stabilized until a satisfactory method of stabilization can be found.

VI. THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The implementation of master-plan proposals will result in the preclusion of short-term consumptive uses from lands in and near the park — with the exception of domestic-livestock grazing, which will be carefully regulated. Short-term non-consumptive uses, including hiking, scenic viewing, and history and natural-history study, will be allowed. The present and contemplated numbers of park visitors are expected to cause negligible disturbance to natural and historical resources, and the proposed management-support facilities, which will be constructed on already disturbed sites, should have no significant effect on the environment's ability to perpetuate itself. In general, master-plan proposals will encourage, rather than limit, long-term environmental productivity.

VII. ANY IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES THAT WOULD BE INVOLVED IN THE PROPOSAL SHOULD IT BE IMPLEMENTED

The master plan entails no irreversible or irretrievable commitments of cultural, biological, or physical resources. Resources affected by the plan will be protected, and committed for preservation and interpretation.

Development will be precluded from acquired or exchanged lands and from buffer-zone lands. Mining claims will be invalidated, and mining will be prohibited in the park and on surrounding buffer-zone lands. Any loss of potential revenue that might be derived from such activities is unquantifiable, but can be considered an irretrievable loss. However, no development or mining is currently taking place within or adjacent to the park, and no significant mineral resources are known to exist within the park. Further, should the need for mineral or commercial resources become critical in the future, management policies can be reevaluated, and adjusted subject to public review.

VIII. ALTERNATIVES TO THE PROPOSED ACTION

A. No Action

1. Description

If no action were taken, the national historic site would continue to be managed under the present administrative policies. The adobe ruins would be maintained in their present state of "historic abandonment," and would be treated with erosion retardants, and monitored until better preservation methods were perfected. Grazing would be managed by the Bureau of Land Management, and Apache Spring would continue to provide water for grazing cattle. Using the existing interpretive/access trail, visitors would arrive on foot at the second fort site, and receive information and services at the nearby visitor-contact station. The existing Park Service residence trailer and maintenance building would continue to be used for administrative purposes.

2. Impacts

Erosion retardants would slow the deterioration of adobe ruins, and continued monitoring of the historic fabric would ensure maximum benefit from this technique. (As stated above, research efforts are underway to develop improved preservation techniques applicable to adobe.)

Visitors would concentrate along the interpretive/access trail and around the two fort sites and visitor-contact station. Staff would concentrate in these areas and near the trailer and maintenance building. In areas where use was concentrated, vegetation would be trampled, and the potential for soil erosion would increase.

The paucity of development would allow a high level of environmental productivity.

B. Reconstruct Some or All of the Historic Structures

1. Description

Under this alternative, all or portions of the second Fort Bowie and related historic buildings would be re-created on the site of the abandoned ruins. However, because the historic structures have virtually eroded away, any re-creation would involve reconstruction rather than restoration. Extensive research and period photographs would improve the historic accuracy of such reconstructions.

If this alternative were implemented, excavation of the ruin sites would ensure that no archeological evidence was destroyed before it was properly inventoried and recorded. Special care would be taken so that existing ruins would not be destroyed or significantly altered, thus decreasing the historic authenticity of the site.

2. Impacts

Although stabilization of existing historic remains would be kept to a minimum, the ruins would be altered, and their historic authenticity would be irreparably diminished. Reconstruction would virtually negate the possibility of returning the site to a state of historic abandonment.

During reconstruction, vegetation would be destroyed, wildlife habitats would be disturbed, and erosion would be accelerated at construction sites and in peripheral areas. The construction area would be unsightly and noisy, and would detract from the visitor experience during the extended construction period.

Reconstruction would entail an irreversible commitment of the historic ruins.

C. Provide Vehicular Access into the Park

1. Description

Under this alternative, land would be set aside to provide an access route for historically accurate animal-drawn vehicles, private automobiles, or a tramway.

The old military road and the Butterfield Overland Trail route could be developed to provide access for animal-drawn vehicles. Additional land would be required for the necessary support facilities (corrals, barns, and possibly blacksmith shops).

A road could be constructed from the Apache Pass road to the second fort, to provide access for private automobiles. This would require numerous cuts and fills, because the proposed route would cross two major washes and several minor washes.

A tramway or other mechanized public transit could provide access along one of the historical routes, or a new route could be constructed.

2. Impacts

Lands that are now preserved and protected would be disturbed, and developed to provide a right-of-way for the access route and support facilities. If a historic route were used, the historic atmosphere could be maintained, and the route improved for use by animal-drawn vehicles. However, the abandoned character of the route would be irretrievably altered.

Road construction would require cuts and fills, creating landscape scars that would last for years. Vegetation and wildlife habitats would be destroyed, and erosion would increase. The proposed access corridor would be noisy, unsightly, and dusty during the construction period.

Vehicular access would be more convenient and comfortable for visitors, and it would allow individuals that were not able to negotiate the trail to enter the Fort Bowie site.

The road right-of-way and the fencing necessary for visitor safety would hamper range-management programs, which would probably result in increased costs to cattle ranchers and/or range deterioration.

Where construction, development, and heavy use occurred, biological productivity would decrease.

D. Provide an Administration/Visitor-Center Complex

1. Description

An administration/visitor-center complex could be provided on park lands or in one of the surrounding communities, probably Bowie or Willcox. The complex would include office space, interpretive facilities, and restrooms.

2. Impacts

The construction of an onsite administration/visitor-center complex would require the provision of an access road for use by the construction crew, and the clearing of a considerable amount of land for development. These activities could result in the destruction of undiscovered historic and archeological sites in the construction zone. However, archeological investigations would precede any proposed construction, to minimize environmental impacts and to avoid damage to undiscovered resources.

Clearing of the land for road access, the complex, and a sewage-disposal system would require the removal of several acres of native vegetation, which would result in disturbance of regional wildlife habitats. Further, the 1 to 2 acres required to construct the complex would no longer be available for cattle grazing.

During construction, development sites would be unsightly, noisy, and dirty. Erosion would increase, and construction scars would probably remain for several years. The large numbers of visitors that could be expected to come to such a complex would also contribute to erosion and to the deterioration of resources.

If an offsite visitor center were provided, visitors would experience the inconvenience of having to travel some distance for the complete Fort Bowie story. Tourism would probably increase in the town supporting the offsite visitor center, contributing to the economy of that community.

Establishing the administration/visitor-center complex on a previously disturbed site in a nearby community would result in less disturbance to vegetation and wildlife.

IX. CONSULTATION AND COORDINATION

A. Consultation and Coordination in the Development of the Master Plan and Accompanying Environmental Assessment

Bureau of Land Management, Safford District Office, Safford, Arizona

The Bureau of Land Management concurred in all actions proposed in the draft master plan and environmental assessment. The Bureau assisted in the development of additional land-withdrawal proposals.

Cochise County, planning director, county engineer, and board of supervisors

Meetings were held with the planning director, county engineer, and District 3 supervisor. County representatives expressed concern over the master-plan provision to leave the Apache Pass road unpaved from Siphon Canyon to Apache Pass because without paving, safety hazards and maintenance workloads might increase. The proposal was revised to delete the "unpaved status" provision and to allow maintenance according to rural highway standards. All other proposed actions were concurred in.

Sam and Josie Mosley, ranchers at eastern mouth of Apache Pass

The Mosleys agreed to sell 20 acres of land at Apache Pass, with lifetime grazing rights reserved. They also concurred in the Siphon Canyon exchange.

Murray Riggs and Eula Riggs Stanton, Apache Pass landowners

Murray Riggs and Eula Riggs Stanton concurred in the proposal that the National Park Service acquire at a later date 10 acres of land at Apache Pass.

Cardon Brothers, adjacent landowners

The Cardon Brothers agreed to study a proposal that would ensure the maintenance of the natural setting at Apache Spring.

Coronado Resource, Conservation and Development Project Steering Committee

The steering committee concurred in the master-plan proposals.

State Historic Preservation Officer

The State Historic Preservation Officer recommended mitigating measures, which the National Park Service agreed to.

B. Coordination in the Review of the Assessment

Copies of the environmental assessment were sent to the following:

Federal agencies
Advisory Council on Historic Preservation
Department of Agriculture (district or regional office)
- Forest Service
- Soil Conservation Service

Department of the Interior (district or regional office)
- Bureau of Land Management
- Bureau of Mines
- Bureau of Outdoor Recreation
- Fish and Wildlife Service
- U.S. Geological Survey

State agencies
Arizona State Clearinghouse
Arizona State Parks Board
Arizona State Water Commission

C. Public Meetings

Willcox
The general consensus at the meeting indicated concurrence in the master-plan proposals. Those in attendance expressed concern about the inadequate signing on approach roads. The State has since installed directional signs.

The city of Willcox representatives expressed a desire to have a Fort Bowie museum in Willcox.

Bowie
The general consensus indicated concurrence in the proposals. Signing on approach roads was mentioned. The community expressed its wishes that the Apache Pass road be paved as soon as it is practical. These wishes were passed along to the district supervisor for the county.

Both the historic site and the town of Bowie were suggested as locations for a visitor center/museum.

D. Other Written and Verbal Responses

All other responses indicated concurrence in the draft master plan and accompanying environmental assessment.

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Various memoranda and correspondence relating to Fort Bowie National Historic Site, Arizona, can be found in the park and land files at the national historic site, and in the park files at Chiricahua National Monument, Arizona.

APPENDIXES

A: LEGISLATIVE BACKGROUND

B: MANAGEMENT OBJECTIVES

C: PLANT SPECIES AT FORT BOWIE

D: WILDLIFE SPECIES AT FORT BOWIE

A: LEGISLATIVE BACKGROUND

The national historic site was authorized by an act of Congress (78 Stat. 681) approved 30 August 1964. The act authorized the Secretary of the Interior to establish a Fort Bowie National Historic Site by publishment in the *Federal Register* when the historic remains of old Fort Bowie and all other privately owned lands within the designated area were acquired. The area was established and a formal dedication held on 29 July 1972.

There are two restrictions specifically mentioned in the authorizing legislation:

> "That the Secretary shall designate no more than one thousand acres for inclusion in said site."
>
> "There is hereby authorized to be appropriated a sum not to exceed $550,000 to carry out the purposes of this act."

Included in the legislation are the following commitments:

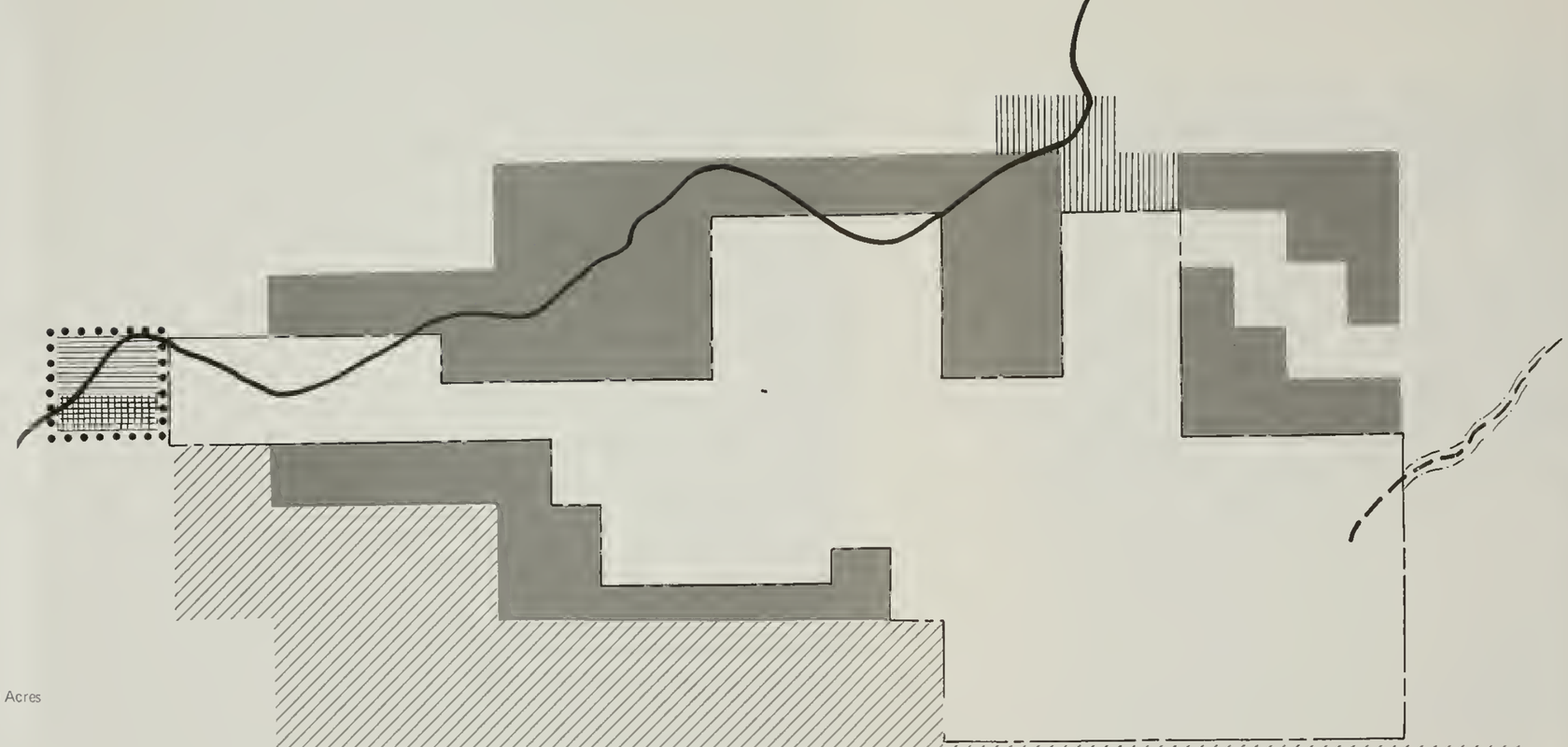
> Grazing:
> "In accordance with an understanding reached with the two private land owners on February 9, 1960, the National Park Service would permit the continuation of grazing on the national historic site under the administration of the Bureau of Land Management. The only exception would be on those portions of the area devoted to public use and interpretation. These areas would be fenced to prevent the impairment of historic values by livestock and to enhance visitor enjoyment of the National Historic Site. Existing water rights and the related right of piping and pumping water from existing springs would be retained by the private owners." (Hearing before the Subcommittee on Public Lands, Committee on Interior and Insular Affairs, S. 91, 5.29.64.6).
>
> Public Land Orders:
> Arizona Public Land Order 035187 withdrawing and transferring jurisdiction to the National Park Service.
>
> Arizona Public Land Order 035307 withdrawing certain adjacent lands from mineral claims.
>
> Development:
> Reference was made to residences, maintenance buildings, utilities, a visitor center, and a road "when needed." No firm commitment to construct such was stated. This development will be precluded if the Fort Bowie master plan that is presently being reviewed is approved and implemented.

Additional Lands:
In reference to the 1,000-acre limit included in the bill, it was recommended that the 30 acres yet to be acquired remain for use in including "any historic remains and sites not presently known or identified, improvement of visitor use of the area and improvement of administration. It is anticipated that any future changes of this nature, if needed, would be accomplished through inclusion of public lands and not privately owned lands."

Water Rights:
"Rights to the use of water from springs in Apache Pass on privately owned land and water now piped and used in cattle and ranching operations on the Neel (Cardon) Ranch will not be adversely affected. This Department proposes that any change in the present use of water originating in these springs will be conditioned on full agreement with the present ranch owners or their successors." In connection with this, a signed agreement was reached between the National Park Service and Earl J. Neel on November 13, 1969, wherein Mr. Neel agreed to relinquish his right to the spring and related right of way at the time the Service can provide a flow of 10 gallons per minute at a designated point. Thereafter "the United States, its employees and visitors to the Site, will not consume the water from Apache Springs, but the Park Service will allow the spring to exist in its natural state."

Land Status Map

FORT BOWIE NATIONAL HISTORIC SITE



- Fort Bowie National Historic Site as presently designated / 970 Acres
- Private Land-Moseley-Proposed for Moseley / BLM exchange Add to BLM buffer zone / 40 Acres
- Scenic highway designation required - Presently county
- Right-of-way for administrative use required
- Bureau of Land Management buffer zone / 590 Acres
- Private Land-Moseley-Proposed purchase / 20 Acres
- Private Land-Lillian Riggs-Proposed purchase / 10 Acres±
- Boundary extension to add to historic site by purchase
- Extension of boundary by right-of-way acquisition
- Bureau of Land Management Buffer Zone—Enlargement / 1780 Acres

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B: MANAGEMENT OBJECTIVES

General Management

Operate the historic site and its facilities year round, during daylight hours.

Collect a single, per-person entrance fee when administratively and economically feasible.

Fulfill the following commitments to Congress and to adjacent landowners:

Allow grazing use to continue, except in areas that contain significant historical remains.

Continue Bureau of Land Management administration of grazing use within the historic site.

Ensure that water rights and access to water are retained by previous landowners.

Work with Bureau of Land Management to zone lands contiguous to the historic site in accordance with its recreation-lands class, to prevent adverse development.

Acquire additional lands for the historic site, under the 1,000-acre limitation, only after mutual agreements and guarantees have been established with adjacent landowners and permittees.

Manage the historic site as an independently funded unit of the Southern Arizona Group, with an onsite superintendent and staff when administratively feasible.

Utilize the technical and professional resources of Chiricahua National Monument on a cooperative and contractual basis, to implement historic-site operations.

Implement formal relationships with local, State, Federal, and other authorities to ensure park input and influence on decisions regarding land management, the environment, and the ecology of the general area.

Ensure adequate administrative-vehicle access along the existing privately owned roadway to the second fort site.

Seek State and county cooperation in preserving the Apache Pass road — from the pass to the mouth of Siphon Canyon — as a historic parkway, with rural highway standards applied.

Seek legislation to raise the development funding ceiling to $1,000,000.

Resource Management

Develop and implement a program to ensure long-term structural integrity of all historic structures.

Manage the historic site as a primitive historical area by:

Maintaining the ruins in a state of "historic abandonment," without restoration.

Keeping all visible development and use of the area appropriate to that of a southwestern frontier settlement of the period 1854-1894.

Take immediate legal action to invalidate mining claims, if challenges arise.

Obtain (in less-than-fee simple) 30 acres of land immediately adjacent to and straddling Apache Pass.

Arrange for a land exchange between the Bureau of Land Management and the owners of 40 acres of private land at the mouth of Siphon Canyon, in order to add this land to the Fort Bowie National Historic Site buffer zone.

Ensure an adequate domestic water supply for present and future needs.

Locate and research additional historic sites, remains, and artifacts — both on and off site — and provide for their protection and preservation.

Establish a continuing, adequately funded historic and prehistoric research program for both resources management and interpretation.

Visitor Use

Determine and enforce a visitor carrying-capacity figure for the historic site.

Develop a regional trail system in cooperation with other Federal agencies.

Determine and implement a historically accurate form of animal-drawn transportation between the Apache Pass road and the second fort site (in addition to pedestrian access along the existing foot trail) when and if administratively feasible.

Ensure that the potential safety hazards and conflicts between visitors and grazing cattle are kept to a minimum.

Determine, by monitoring travel patterns and visitor interests, the need for and location of necessary administrative, visitor-service, and visitor-use facilities.

Interpretation

Interpret the historic site as a southwestern frontier settlement of the period 1854-1894, with major themes of the frontier military post, the Butterfield Overland Mail route, and the Chiricahua Apache Indian.

Interpret all significant historical features and sites now existing, as well as additional remains located and identified through future research efforts.

Provide personal-contact interpretive services for all visitors, emphasizing the ethno-ecological story of the historic site.

C: PLANT SPECIES OBSERVED AT FORT BOWIE NATIONAL HISTORIC SITE*

Common Name	Scientific Name
Lip fern	*Cheilanthes lindheimeri*
Lip fern	*Cheilanthes wootoni*
Woodsia fern	*Woodsia mexicana*
Cliff-brake fern	*Pellaea longimucronata*
Cloak fern	*Notholaena sinuata*
Mexican pinyon	*Pinus cembroides*
Colorado pinyon	*Pinus edulis*
Alligator juniper	*Juniperus deppeana*
One-seed juniper	*Juniperus monosperus*
Mexican tea	*Ephedra trifurca*
Festuca	*Festuca octoflora*
Green sprangletop	*Leptochloa dubia*
Six-week three-awn	*Aristida adscensionis*
Tangle-head	*Heteropogon contortus*
Plains bristle grass	*Setaria macrostachya*
Fluff grass	*Tridens pulchellus*
Large-flowered tridens	*Tridens grandiflorus*
Slim tridens	*Tridens muticus*
Spruce-top grass	*Bouteloua chondrosioides*
Side-oats grama	*Bouteloua curtipendula*
Black grama	*Bouteloua eriopada*
Blue grama	*Bouteloua gracilis*
Six-week grama	*Bouteloua barbata*
Feather finger-grass	*Chloris virgata*
Wolf tail grass	*Lycurus phleoides*
Lehman's love-grass	*Eragrostis lehmanniana*
Stink grass	*Eragrostis cilianencis*
Bur-grass	*Tragus berteronianus*
Witch grass	*Panicum capillare*

*Nomenclature follows Kearney, T.H., and Peebles, R.H., *Arizona Flora.*

Common Name	Scientific Name
Vine mesquite	*Panicum obtusum*
Squirrel tail	*Sitanion hystrix*
Bull-grass	*Muhlenbergia emersleyi*
Bush muhly	*Muhlenbergia porteri*
Deer grass	*Muhlenbergia rigens*
Arizona cotton-top	*Trichanchne californica*
Cane bear-grass	*Andropogon barbinodis*
Bermuda grass	*Cynodon dactylon*
Tobosa grass	*Hilaria mutica*
Drop-seed grass	*Sporbulus wrightii*
Chufa, Yellow nut-grass	*Cyperus esculentus*
Flat-sedge	*Cyperus aristatus*
Nolina	*Nolina microcarpa*
Banana leaf yucca	*Yucca bacata*
Soap-tree yucca	*Yucca elata*
Wheeler sotol	*Darsylirion sheeleri*
Sego lily	*Calochortus ambiguus*
Wild onion	*Allium acuminatum*
Blue-dicks	*Dichelostemma pulchellum*
Mountain (Palmer) agave	*Agave palmeri*
Perry agave	*Agave perryi*
Fremont cottonwood	*Populus fremontii*
Bonpland willow	*Salix bonplandiana*
Dudley willow	*Salix gooddingii*
Arizona walnut	*Junglans mayor*
Arizona white oak	*Quercus arizonica*
Emory oak	*Quercus emoryi*
White-leaf oak	*Quercus hypoleucoides*
Gray oak	*Quercus grisea*
Shrub-leaf oak or Scrub oak	*Quercus turbinella*
Net-leaf hackberry	*Celtis reticulata*
Texas mulberry	*Morus microphylla*
Bastard toadflax	*Comandra pallida*

Common Name	Scientific Name
Ball American mistletoe	*Phoradendron bolleanum*
Cory American mistletoe	*Phoradendron coryae*
Mesquite American mistletoe	*Phoradendron californicum*
Skeleton-weed	*Eriogonum deflexum*
Wild buck-weed	*Eriogonum wrightii*
Antelope sage	*Eriogonum jamesii*
Sorrell eriogonum	*Eriogonum abertianum*
Canaigre, Wild rhubarb	*Rumex humenosepalus*
Winter fat	*Erotia lanata*
Russian thistle	*Salsola kali*
Four-wing salt bush	*Atriplex canescens*
Nettleleaf goosefoot	*Chenopodium murale*
Narrowleaf goosefoot	*Chenopodium pratericola*
Snake cotton	*Froelichia arizonica*
Careless weed	*Amaranthus palmeri*
Fringed pig-weed	*Amaranthus fimbriatus*
Ball-clover, Globe-amaranth	*Gomphrena caespitosa*
Spiderling	*Boerhaavia purpurascens*
Spiderling	*Boerhaavia spicata*
Trailing four o'clock	*Allionia incarnata*
Pigweed	*Triathema portulacastrum*
Larkspur	*Delphinium viresens*
Western virgin's bower	*Clematis drummondii*
Gold poppy	*Eschscholtzia mexicana*
Golden-smoke	*Corydalis aurea*
Prickly poppy	*Argemone platyceras*
Pepper-grass	*Lepidium lasiocarpum*
Twist-flower	*Streptanthus arizonicus*
Bladder pod	*Lesquerella gordoni*
Clammy weed	*Polanisia trachysperma*

Common Name	Scientific Name
Coral-bell	*Heuchera sanguinea*
Apache plume	*Fallugia paradoxa*
Hairy mountain-mahogany	*Cercocarpus breviflorus*
Birch-leaf mountain-mahogany	*Cercocarpus betuloides*
Western honey mesquite	*Prosopis juliflora var. torreyana*
Velvet honey mesquite	*Prosopis julifora var. vetulina*
White-thorn acacia	*Acacia constricta*
Fern acacia, White-ball acacia	*Acacia angustissima var. cuspidata*
Cat-claw acacia	*Acacia gregii*
Fairy-duster	*Calliandra eriophylla*
Dalea	*Dalea wrightii*
Pea-bush, Indigo-bush	*Dalea formosa*
Peak-bush	*Dalea wislizeni*
Hog-potato	*Hoffmanseggia densiflora*
Mexican locus	*Robina neomexicana*
Desert senna	*Cassia covesii*
Turner bundle-flower	*Desmanthus virgatus*
Deer-vetch	*Lotus humistratus*
Lupine	*Lupinus consinnus*
Milk-vetch	*Astragalus thurberi*
Wooton's loco-weed	*Astragalus wootoni*
Hoffman loco-weed	*Astragalus allochrous*
Sheep loco-weed	*Astragalus nothoxys*
Milk-vetch	*Astragalus colycosus*
Heron-bill	*Erodium cicutarium*
Filaree	*Erodium texanum*
Flax	*Linum usitatissimum*
Puncture vine	*Tribulus terrestris*
Mexican poppy	*Kallstroemia grandiflora*
Creosote bush	*Larrea tridentata*
Narrow-leaf hop-tree	*Ptelea angustifolia*
Milk-wort	*Polygala macradenia*

Common Name	Scientific Name
Mern's sumac	*Rhus choriophylla*
Skunk-bush sumac	*Rhus trilobata*
Little-leaf sumac	*Rhus microphylla*
Western soapberry	*Sapindus saponaria*
Desert ceanothus	*Ceanothus greggii*
Graythorn condalia	*Condalia lycioides*
Mexican crucillo	*Condalia spathulata*
Canyon grape	*Vitis arizonica*
Smooth canyon grape	*Vitis arizonica var. glabra*
Indian mallow	*Abutilon parvulum*
Desert mallow	*Sphaeralcea laxa*
Globe mallow	*Sphaeralcea wrightii*
Ocotillo	*Fouquiera splendens*
Stick-leaf	*Mentzelia pumila*
Desert christmas cactus	*Opuntia leptocaulis*
Cane cholla	*Opuntia spinosior*
Klein's cholla	*Opuntia kliniae*
Desert prickly-pear	*Opuntia engelmanii*
Purple-fruited prickly-pear	*Opuntia phaeacantha*
Martin's blunt-spined prickly-pear	*Opuntia macrocentra var. Martiniana*
Blunt-spined prickly-pear	*Opuntia macrocentra*
Clock-face prickly-pear	*Opuntia chlorotica*
Fendler's hedgehog	*Echinocereus fendleri*
Arizona rainbow	*Echinocereus rigidissimus*
Fendler's needle hedgehog	*Echinocereus rectispinus*
Robust hedgehog	*Echinocereus robustus*
Leding's hedgehog	*Echinocereus ledingii*
White-spined clare-cup cactus	*Echinocereus triglochidiatus var. mojavensis*
Candy or fish-hook barrel cactus	*Echinocactus wislizeni*
Pancake pincushion	*Mammillaria heyderi var. spplanata*
Arizona pincushion	*Mammillaria aggregata*
Fish-hook pincushion	*Mammillaria microcarpa*

Common Name	Scientific Name
Olive's pincushion	*Mammillaria oliciae*
Night-blooming cereus	*Cereus gregii*
Hummingbird trumpet	*Zauschneria latifolia*
Scarlet gaura	*Gaura gracilis*
Sun-drops	*Oenothera leptocarpa*
Creeping primrose	*Oenothera runcinata*
Yellow-evening primrose	*Oenothera primiveris*
Evening primrose	*Oenothera hookeri*
Wild carrot	*Spermolepis echinata*
Silk-tassel	*Garrya flavescens*
Silk-tassel	*Garrya wrightii*
Point-leaf manzanita	*Arctostaphylos pungens*
Pringlei manzanita	*Arctostaphylos pringlei*
Chittam-wood	*Bumelia lanuginosa var. rigida*
Velvet or Arizona ash	*Fraxinus velutian*
Milk-weed	*Asclepias nyctaginifolia*
Milk-weed	*Asclepias engelmaniana*
Morning-glory	*Evolvulus sericeus*
Morning-glory	*Ipomoea barbatisepala*
Star-glory	*Ipomoea coccinea*
Many-flowered gilia	*Gilia multiflora*
Star-flowered gilia	*Gilia longiflora*
Phlox	*Phlox austromontana*
Wild-heliotrope	*Phacelia crenulata*
Arizona phacelia	*Phacelia popei var. Arizonica*
Purplemat	*Nama hispidum*
Stick-weed	*Lapula texana*
Growell, Buccoon	*Lithospermun cobrense*
Fiddleneck	*Amsinckia intermedia*
Wright's lippia	*Lippia wrightii*
Sweet william	*Verbena bipinnatifida*

Common Name	Scientific Name
Blue-curls	*Trichostema arizonicum*
Mock-pennyroyal	*Hedeoma hyssopifolium*
Betony	*Stachys coccinea*
Chia	*Salvia columbariae*
Horehound	*Marrubium vulgare*
Wolfberry	*Lycium fremontii*
Pale-wolfberry	*Lycium pallidum*
Desert tobacco	*Nicotiana trigonophylla*
Horse-nettle nightshade	*Solanum elaeagnifolium*
Sacred datura	*Datura meteloides*
Monkey-flower	*Mimulus guttatus*
Monkey-flower	*Mimulus rubellus*
Indian paint-brush	*Castilleja sessiliflora*
Indian paint-brush	*Castelleja integra*
Penstemon	*Penstemon linarioides*
Louse-wort	*Pedicularis grayi*
Desert willow	*Chilopis linearis*
Unicornplant, Devil's-claws	*Martynia parviflora*
Chupariosa	*Anisacanthus thurberi*
Plantin	*Plantago purshii*
Finger-leaf gourd	*Cucurbita digidata*
Buffalo gourd	*Cucurbita foetidissima*
Bellflower	*Triodanis perfoliata*
Wild zinnia	*Zinnia pumila*
Rocky mountain zinnia	*Zinnia grandiflora*
Varnish-bush	*Flourensia cernua*
Golden crowbeard	*Verbesina encelioides*
Spanish-needles	*Bidens leptocephala*
Paper-flower	*Psilostrophe cooperi*
Goldfields	*Baeria chrysostoma*
Desert baileya	*Baileya multiradiata*
Desert marigold	*Baileya pleniradiata*
Fetid-marigold	*Pectis filipes*
Fetid-marigold	*Pectis prostata*

Common Name	Scientific Name
Artemisia	*Artemisia ludoviciana*
Groundsel	*Senecio multicapitatus*
Ragweed	*Senecio monoencis*
Thread-leaf grounsel	*Senecio longilobus*
New Mexico thistle	*Circium neomexicanum*
Desert holly	*Perezia nana*
Arizona holly	*Perezia wrightii*
Stick-weed, Wire lettuce	*Stephanomeria pauciflora*
Desert dandelion	*Malacothrix fendleri*
Sow-thistle	*Sonchus oleraceus*
Prickly-lettuce	*Lactuca serriola*
Pachaba	*Brickellia californica*
Baccharis-leaf brickellia	*Brickellia baccharidea*
Small snake-weed	*Gutierrezia microcephala*
Turpentine-bush	*Aplopappus laricifolius*
Burro golden-weed	*Aplopappus tenuisectus*
Spiny aplopappus	*Aplopappus spinulosus*
Golden-weed, Jimmy-weed	*Aplopappus gracilis*
Rabbit-brush	*Chrisothamnus nauseosus*
Baby aster	*Aster hirtifolius*
Horse-weed	*Erigeron canadensis*
Sprawling daisy	*Erigeron nudiflorus*
Wild daisy	*Erigeron divergens*
Seep-willow, Batamote	*Baccharis glutinosa*
Desert-broom	*Baccharis sarothroides*
Arizona baccharis	*Baccharis thesioides*
Yerba del pasmo	*Baccharis pteronioides*
Everlasting	*Gnaphalium wrightii*
Mariola	*Parthenium incanum*
Marsh-elder	*Iva dealbata*
Bursage	*Franseria confertiflora*

D: WILDLIFE SPECIES OBSERVED OR REPORTED AT FORT BOWIE NATIONAL HISTORIC SITE*

Common Name	Scientific Name
Great plains toad	*Bufo cognatus*
Western spadefoot toad	*Scaphiopus hammondi*
Leopard frog	*Rana pipiens*
Bullfrog	*Rana catesbeiana*
Desert banded gecko	*Coleonyx variegatus*
Zebra-tailed lizard	*Callisaurus draconoides*
Southwestern earless lizard	*Cophoseurus texana scitula*
Collared lizard	*Crotaphytus collaris*
Clark's spiny lizard	*Sceloporus clarki*
Desert spiny lizard	*Sceloporus magister*
Yarrow's spiny lizard	*Sceloporus jarrowie*
Tree lizard	*Urosaurus ornatus*
Texas horned lizard	*Phrynosoma conutum*
Round-tailed horned lizard	*Phrynosoma modestum*
Short-horned lizard	*Phrynosoma douglassi*
Sonoran skink	*Eumeces obsoletus*
Arizona alligator lizard	*Gerrhonotus kingi*
Southern whiptail	*Cnemidophoros tigris graeilis*
Chihuahua whiptail	*Cnemidophoros exanguis*
Little striped whiptail	*Cnemidophoros inornatus*
Gila monster	*Heloderma suspectum*
Big Ben patch-nose snake	*Salvadora deserticola*
Gopher snake	*Pituophis melanolaucos*
Sonora whip-snake	*Masticophis bilineatus*
Mountain patch-nose snake	*Salvadora grahamiae*
Black-necked garter snake	*Thamnophis cyrtopsis*
Ringneck snake	*Diadophis punctatus regal*

*Nomenclature follows Stebbins, R. C., *A Field Guide to Western Reptiles and Amphibians,* Burt, W. H., and Grossenheider, R. P., *A Field Guide to the Mammals,* and Peterson, R. T., *A Field Guide to Western Birds.*

Common Name	Scientific Name
Western diamondback	*Crotalus atrox*
Mojave rattlesnake	*Crotalus scutulatus*
Black-tailed rattlesnake	*Crotalus molossus*
Hognose bat	*Choeronycteris mexicana*
Western pipistrel	*Pipistrellus hesperus*
Raccoon	*Procyon lotor*
Coati	*Nasua narica*
Badger	*Taxidea taxus*
Striped skunk	*Mephitis mephitis*
Coyote	*Canis latrans*
Gray fox	*Urocyon cinereoargentus*
Mountain lion	*Felis concolor*
Bobcat	*Lynx rufus*
Rock squirrel	*Citellus variegatus*
Roundtail ground squirrel	*Citellus tereticaudus*
Yuma antelope squirrel	*Ammospermophilus harrisi*
Cliff chipmunk	*Eutamias dorsalis*
Valley pocket gopher	*Thonomys bottae*
Merrian kangaroo rat	*Dipodomis merriami*
Bailey pocket mouse	*Perognathus baileyi*
Brush mouse	*Peromyscus boylei*
Western harvest mouse	*Reithrodontomys megalotis*
Cactus mouse	*Peromyscus eremiscus*
Deer mouse	*Peromyscus maniculatus*
White-throated woodrat	*Neotoma albigula*
Mexican woodrat	*Neotoma mexicana*
Blacktail jackrabbit	*Lepus californicus*
Desert cottontail	*Sylvilagus auduboni*
Javalina	*Peccari angulatus*

Common Name	Scientific Name
Mule deer	*Odocoileus hemiomus*
Whitetail deer	*Odocoileus virginianus*
Porcupine	*Erethizon dorsatum*
Green heron	*Butorides virescens*
Turkey vulture	*Cathartes aura*
Black vulture	*Cathartes atratus*
Golden eagle	*Aquila chrysaetos*
Cooper's hawk	*Accipter cooperii*
Sharp-shinned hawk	*Accipter striatus*
Red-tailed hawk	*Buteo jamaicensis*
Swainson's hawk	*Buteo swainsoni*
Marsh hawk	*Circus cyaneus*
Prairie falcon	*Falco mexicanus*
Pigeon hawk	*Falco columbarius*
Sparrow hawk	*Falco sparverius*
Gambel's quail	*Lophortyx gambelii*
Scaled quail	*Callipepla squamata*
Killdeer	*Charadrius vociferus*
Spotted sandpiper	*Actitis macularia*
Lesser yellowlegs	*Totanus flavipes*
Forster's tern	*Sterna forsteri*
Band-tailed pigeon	*Columba fasciata*
White-winged dove	*Zenaida asiatica*
Mourning dove	*Zenaidura macroura*
Roadrunner	*Geococcyx californianus*
Great horned owl	*Bubo virginianus*
Long-eared owl	*Asio otus*
Whippoorwill	*Caprimulgus vociferus*
Poorwill	*Phalaenoptilus nuttallii*
Common nighthawk	*Chordeiles minor*
Lesser nighthawk	*Chordeiles acutipennis*
White-throated swift	*Aeronautes saxatalis*
Black-chinned hummingbird	*Archilochus alexandri*
Costa's hummingbird	*Calypte costae*
Anna's hummingbird	*Calypte anna*
Borad-tailed hummingbird	*Selasphorus platycercus*
Rufous hummingbird	*Selasphorus rufus*
Rivoli's hummingbird	*Eugenes fulgens*

Common Name	Scientific Name
Belted kingfisher	*Megaceryle alcyon*
Red-shafted flicker	*Colaptes cafer*
Acorn woodpecker	*Melanerpes formicvorus*
Yellow-bellied sapsucker	*Sphyrapicus varius*
Williamson's sapsucker	*Sphyrapicus thyroideus*
Lewis' woodpecker	*Asyndesmus lewis*
Ladder-backed woodpecker	*Dendrocopos scalaris*
Western kingbird	*Tyrannus verticalis*
Cassin's kingbird	*Tyrannus vociferans*
Ash-throated flycatcher	*Myiarchus cinerascens*
Olivaceous flycatcher	*Myiarchus tuberculifer*
Black phoebe	*Sayornis nigricans*
Say's phoebe	*Sayornis saya*
Empidonax (Hammond's or Dusky)	*Empidonax sp.*
Gray flycatcher	*Empidonax wrightii*
Western flycatcher	*Empidonax difficilis*
Western wood pewee	*Contopus sordidiulus*
Olive-sided flycatcher	*Nuttallornis borealis*
Vermillion flycatcher	*Pyrocephalus rubinus*
Violet-green swallow	*Tachycineta thalassina*
Rough-winged swallow	*Stelgidopteryx ruficollis*
Barn swallow	*Hirundo rustica*
Cliff swallow	*Petrochelidon pyrrhonota*
Scrub jay	*Aphelocoma coerulescens*
Mexican jay	*Aphelocoma ultramarina*
Common raven	*Corvus corax*
Clark's nutcracker	*Nucifraga columbiana*
Bridled titmouse	*Parus wollweberi*
Verdin	*Auriparus flaviceps*
Common bushtit	*Psaltriparus minimus*
White-breasted nuthatch	*Sitta carolinensis*
Brown creeper	*Certhia familiaris*
House wren	*Troglodytes aedon*
Bewick's wren	*Thryomanes bewickii*
Cactus wren	*Campylorhynchus brunneicapillum*
Canyon wren	*Catherpes mexicanus*
Rock wren	*Salpinctes obsoletus*
Mockingbird	*Mimusm polyglottos*
Bendire's thrasher	*Toxostoma bendirei*
Curve-billed thrasher	*Toxostoma curvirostre*
Crissal thrasher	*Toxostoma dorsale*

Common Name	Scientific Name
Sage thrasher	*Orescoptes montanus*
Robin	*Turdus migratorius*
Hermit thrush	*Hylocichla guttata*
Western bluebird	*Sialia mexicana*
Mountain bluebird	*Sialia currucoides*
Townsend's solitaire	*Myadestes townsendi*
Horned lark	*Eremophila alpestris*
Blue-gray gnatcatcher	*Polioptila caerulea*
Ruby-crowned kinglet	*Regulus calendula*
Cedar waxwing	*Bombycilla cedrorum*
Phainopepla	*Phainopepla nitens*
Loggerhead shrike	*Lanius ludovicianus*
Solitary vireo	*Vireo solitarius*
Warbling vireo	*Vireo gilvus*
Orange-crowned warbler	*Vermivora celata*
Nashville warbler	*Vermivora ruficapilla*
Virginia's warbler	*Vermivora virginiae*
Lucy's warbler	*Vermivora luciae*
Myrtle warbler	*Dendroica coronata*
Audubon's warbler	*Dendroica auduboni*
Yellow-throated warbler	*Dendroica dominica*
MacGillivray's warbler	*Oporonis tolmiei*
Wilson's warbler	*Wilsonia pusilla*
Yellow-breasted chat	*Icteria virens*
House sparrow	*Passer domesticus*
Western meadowlark	*Sturnella neglecta*
Hooded oriole	*Icterus cucullatus*
Scott's oriole	*Icterus parisorum*
Brown-headed cowbird	*Molothrus ater*
Bronzed cowbird	*Tangavius aeneus*
Western tanager	*Piranga ludoviciana*
Summer tanager	*Piranga rubra*
Cardinal	*Richmondena cardinalis*
Pyrrhuloxia	*Pyrrhuloxia sinuata*
Black-headed grosbeak	*Pheucticus melanocephalus*
Blue grosbeak	*Guiraca caerulea*
Lazuli bunting	*Passerina amoena*
House finch	*Carpodacus mexicanus*
Purple finch	*Carpodacus purpureus*
Pine siskin	*Spinus pinus*
Lesser goldfinch	*Spinus psaltria*

Common Name	Scientific Name
Green-tailed towhee	*Chlorura chlorura*
Rufous-sided towhee	*Pipilo erythrophthalmus*
Lark bunting	*Calamospiza melanocorys*
Savannah sparrow	*Passerculus sandwichensis*
Vesper sparrow	*Pooecetes gramineus*
Lark sparrow	*Chondestes grammacus*
Rufous-crowned sparrow	*Aimophila ruficeps*
Cassin's sparrow	*Aimophila cassinii*
Black-throated sparrow	*Amphispiza bilineata*
Oregon junco (both forms)	*Junco oreganus*
Gray-headed junco	*Junco caniceps*
Chipping sparrow	*Spizella passerina*
Brewer's sparrow	*Spizella breweri*
Black-chinned sparrow	*Spizella atrogularis*
White-crowned sparrow	*Zonotrichia leucophrys*
White-throated sparrow	*Zonotrichia albicollis*
Fox sparrow	*Passerella iliaca*
Lincoln's sparrow	*Melospiza lincolnii*
Song sparrow	*Melospiza melodia*

As the Nation's principal conservation agency, the Department of the Interior has basic responsibilities to protect and conserve our land and water, energy and minerals, fish and wildlife, parks and recreation areas, and to ensure the wise use of all these resources. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

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